

ENVIRONMENTAL INDICATORS OF INFECTIOUS DIARRHEA IN VELLORE, INDIA

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Background and Aims: Diarrhea is an important source of morbidity and mortality in resource poor settings. Transmission of enteric pathogens is only partially understood. This study aims to characterize environmental drivers in transmission of enteric infections in 80 rural and 160 urban households in Vellore, India.

Methods: Diarrheal episodes were investigated with microbiologic analysis of stool collected weekly in an ongoing 1-year open cohort study from August 6-January 31, 2010. Information on demographics, hygiene, human/animal interactions, and water sources was collected by questionnaires. Household water was examined for fecal contamination using fecal coliform counts. Fly densities were measured using sticky ribbons placed in kitchens. Log linear multivariate analyses were performed to examine the role of these indicators on the incidence and duration of diarrhea.

Results: There were 91 episodes of diarrhea over 198795 total person days (PD). There were substantial fluctuations in monthly diarrheal incidence from 0.15 to 0.92 per 1000PD. Fecal contamination was found in the majority (81%) of public water samples in rural areas. Water samples collected from household storage containers had fecal coliforms present in 67% and 74.6% of samples from rural and urban areas respectively. The use of private wells, house-taps, and increased fly densities were associated with diarrheal episodes. Risk factors for increased duration of diarrhea included animals in living quarters, family size, private well or house-tap use, nails not trimmed, and increased fly densities, while rural living, indoor latrine use and better education were protective. The adjusted relative risk associated with house-tap use was 3.07[95%CI:2.01,4.67] for increased diarrheal episodes and 2.69[95%CI:1.14,5.14] for a longer episode duration.

Conclusions: Several environmental risk factors for increased diarrhea were identified including water sources, living conditions, hygiene, and fly densities. The seasonality of diarrhea should be confirmed by completion of the study.